Region 8 (Pacific Southwest Region) FY 2012 Annual Work Plan

1. Region 8 I&M Program: Introduction

1.1. Vision, Goals and Objectives

Vision

The Region 8 Inventory and Monitoring (I&M) Program, as a part of the regional biological program and in conjunction with the Landscape Conservation Cooperatives (LCCs) initiatives, identifies important natural resources on National Wildlife Refuge System (NWRS) lands and provides information to evaluate management of these resources under the influence of climate change and other environmental stressors. Our basic philosophy is that inventory and monitoring information should support management decision making at multiple spatial scales. The regional program steps down from the national *Strategic Plan* and *Operational Blueprint*.

National Wildlife Refuges (refuges or NWR) and Wetland Management Areas are the foundation of the I&M Program. We provide support to the field stations by identifying priority conservation and management issues and tracking the status and trends of abiotic and biotic factors needed to effectively manage refuge lands and waters. We provide technical guidance and expertise to stations to develop planning documents, monitoring protocols, databases, and data analysis strategies so that information is available and accessible to make the best management decisions. We identify landscape level priorities for monitoring on refuges by coordinating with internal and external partners, particularly LCCs, to share information, enhance cooperation, and raise the quality of science and resource management across the landscape.

Goals

- Enable refuges to use inventory and monitoring to practice strategic habitat conservation.
- Build scientific capacity to strengthen the caliber of the natural resource program.
- Bridge the information gap between local refuges and landscape scale institutions by working with LCCs, the Natural Resources Program Center (NRPC, the national home of the I&M program) and other partners.

Objectives for Fiscal Year (FY) 2012

- Establish good communication with refuges: assist development of the Regional Biological Advisory Council (BAC), plan a needs assessment process for all refuges, communicate regularly with refuge staff concerning ongoing refuge specific inventory and monitoring projects funded by the I&M program.
- Continue partnerships with LCCs and other internal and external partners.
- Assist the NRPC on national projects: test databases, respond to data calls, participate in national pilot projects

- Continue pilot projects to 1) determine how to cull and catalog refuge legacy documents, 2) develop strategic planning process for invasive species control, 3) establish consistent use of bird protocols across refuges, and 4) develop a system for tracking water rights on refuges.
- Orchestrate contractor/refuge cooperation to complete Hydrogeomorphic analyses (HGMs) for 7 refuges.
- Complete six draft Water Resource Inventories and Assessments (WRIAs) on refuges.
- Continue long term planning at regional and national levels.

1.2. Organization and Focus Areas

The organizational structure developed by Region 8 (Figure 1) mirrors the Operational Business Addendum Blueprint for Inventory and Monitoring organization and structure. We are currently re-evaluating the organizational structure shown in Figure 1.

Region 8 is a new region with a very small regional staff. The region had one Refuge Regional Biologist position (added in 2009) prior to the development of the I&M program.

Most Region 8 I&M program staff members are based at California State University Sacramento (CSUS) with the California LCC and U.S. Geological Survey scientists. One I&M biologist (Orien Richmond) is stationed at Don Edwards San Francisco Bay NWR and the I&M Specialist (Giselle Block) works at the CSUS office and at the San Francisco Bay Joint Venture Office in Fairfax, California. We share our administrative assistant with the California LCC. Future position additions will be considered based on funding priorities.

1.3. Integration with the Regional Refuge Biological Program

The Regional Refuge Operations Division Chief provides overall guidance and support for the Region 8 Biological Program, which currently consists of the Regional Biologist and I&M program staff. The Regional Biologist integrates into the overall regional biological program by supporting Refuge stations in the development and review of biological planning documents, and by assisting the I&M staff to review inventory and monitoring efforts locally, regionally and nationally.

Regional I&M staff collaborates with NWRS programs such as Planning, Fire Management and Realty; and other Service programs including the Partners and Coastal Program, Migratory Bird Management, Fisheries, Endangered Species and Water Resources to ensure that I&M activities have multiple benefits in the Region, and to avoid duplication of effort.

1.4. Coordination with Partners via Landscape Conservation Cooperatives

The National I&M *Strategic Plan* and *Blueprint* envision that the I&M program will work closely and seamlessly with LCCs that fall within Region 8 (Figure 2). In Region 8, we are carrying out this vision by co-locating our office (and most of our staff) with the California LCC and the US Geological Survey on the CSUS campus. We expect that this arrangement will be beneficial in many ways. One challenge of the I&M program is to move among geographical scales: we will be integrating biological issues and information from the individual refuge scale to regional, national and global scales. Working daily with the California LCC allows us to move among these scales more easily, and to identify opportunities and efficiencies quickly. Having the resources of the university and the US Geological Survey close at hand

also benefits our program. One I&M staff member is designated as liaison to the California LCC, and at least two staff members will serve on LCC teams. We share information about partner proposals for funding, so that projects of joint interest will be supported. The Regional Refuge biologist has established linkages with Great Basin and Desert LCCs and I&M program staff will continue to network with all LCCs as they develop.

2. Staffing

Region 8 Biology and I&M Program staff members are listed below. Our organizational chart is Figure 1.

Refuge Operations Division Chief, Carol Damberg: program oversight and leadership (office: Regional Office)

Regional Biologist, Sallie Hejl: habitat management reviews, Comprehensive Conservation Plan (CCP) and Habitat Management Plan (HMP) review and development, regional invasive species coordinator, and Great Basin and Desert LCC liaison (Office: Regional Office)

I&M Staff
I&M Coordinator, Karen Laing: program leadership (Office: CSUS)

Data Manager, Kaylene Keller: GIS and database development and organization (Office: CSUS)

I&M Specialist (similar to *Zone Biologist* in some other regions), Giselle Block: field staff supervision, California LCC liaison, climate change, invasive species and habitat management planning (Office: CSUS & Joint Venture Office)

Hydrologist, Rachel Esralew: WRIAs, HGMs and wetland assessments (Office: CSUS)

Wildlife Biologist, Orien Richmond: hydrogeomorphic analysis (HGMs) and bird monitoring (Office: Don Edwards NWR)

Administrative Officer, Rita Howard: office management (Office: CSUS; shared position with California LCC)

Vacancies as listed on current organizational chart: *Data Manager, Botanist (2), Hydrologist, I&M Specialist/Zone Biologist, Wildlife Biologist*

Student Interns and Volunteers:

- Kelsey McDonald: Develop I&M factsheets/outreach materials, refuge field support, legacy data.
- Sharon Dulava: Support HGMs, legacy data, field support
- Jason Stone: Water resources support

Key Cooperators

- California LCC, North Pacific LCC

- Region 8 NWRS staff: Planning, Realty, Visitor Services, Fire Management, Regional Biological Advisory Council
- Region 8 staff: Migratory Bird Management, Contaminants
- Region 1 staff: Water Resources, I&M
- U.S. Geological Survey
- San Francisco Joint Venture, Central Valley Joint Venture
- University of California, Davis (Information Center for the Environment, Watershed Center)
- University of Nevada, Reno
- Utah State University
- California State University, Sacramento

3. Planned Activities and Anticipated Products

Table 1 outlines the major activities and products expected of the Region 8 I&M program for FY 2012. The activities included in Table 1 reflect our current focus on foundational aspects of the program: communication, including learning about existing resources and refuge needs; establishing partnerships with LCCs and others; conducting pilot projects to develop best practices for inventory and monitoring on refuges; completing HGMs and WRIAs; collecting and cataloging existing data; and organization of data collection, storage and retrieval systems.

4. Budget

Of the total base budget of approximately $1.9 million expected in FY 2012, approximately $700,000 will be spent on salaries and related costs, approximately $100,000 on overhead and support costs, and the remainder on contracts or direct funding to projects on refuges.

Table 1. Region 8 Inventory and Monitoring Activities FY 2012

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	3.1.1. and 3.1.2. STATUS OF STATION HABITAT MANAGEMENT PLANS AND I&M PLANS		
	Establishment of Habitat Management Plans (HMPs) and Inventory and Monitoring Plans (IMPs) in Region 8	At least one HMP initiated in Region 8 (specific refuge to be identified).	Hejl
	3.1.3. IDENTIFY I&M PRIORITIES		
Task A	*Strategic Planning* Develop long-term (5 year) strategic plan for the Region 8 Inventory and Monitoring (I&M) Program. Work with other regional coordinators and Natural Resources Program Center (NRPC) on national strategic planning	Regional Strategic Plan National Strategic Plan	Laing, Keller, Block, Richmond, Esralew Damberg Laing Damberg
	3.2.1. ABIOTIC RESOURCES		
1B	*Hydrogeomorphic Analysis* Hydrogeomorphic (HGM) assessments examine the historical ecology of refuges and help identify restoration and management options. We will also integrate HGM data gathering into broader I&M program projects to catalog refuge abiotic, legacy and water data. Finally, we will assess the utility of the final HGM reports and evaluate whether more HGMs in Region 8 are needed.	HGM reports for 5 refuges: Bitter Creek, Ruby Lake, Merced, Kern, and Pixley NWRs, in FY 2012 (Ellicott Slough, Modoc and Stone Lakes HGMs in FY 2013). Water Resource Inventory and Assessment (WRIA) database populated with data from HGM data mining effort. Geospatially Referenced Archive System (GRAS) populated with data from HGM data mining effort.	Richmond, Esralew, Block
2A	*Water Resource Inventory and Assessments* The National WRIA project is a reconnaissance level inventory (database) and assessment (report) of baseline water resources information for field stations on water rights,	Draft report and draft WRIA dataset for 6 refuges identified in the pilot WRIA program.	Esralew

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	water quality, water quantity and climate, water management, and water resources threats and needs.	Report summarizing pilot WRIAs and guidelines for prioritizing and conducting future WRIAs.	
	Pilot study to examine the feasibility and cost of development of a database to store and allow easy access to geospatial water supply and water rights information for refuges. Store and reference hydrologic datasets developed during WRIA process in the national WRIA database. As part of the HGM process, and in partnership with the Region 8 Environmental Contaminants Program, develop Contaminant Assessment Process (CAP) reports for refuges that provide standardized inventories of potential environmental contaminants threats to Refuges and other Service lands. The reports will review ecological and physical characteristics of refuge land and surrounding area relative to possible contaminants issues.	Report describing results of pilot study for 4 refuges and proposal describing cost to expand project to remaining Region 8 refuges. Report to national water team on utility and functionality of new WRIA database. Assist with completion of CAP reports for Kern and Pixley Refuges as part of the HGM process and in coordination with the Region 8 Environmental Contaminants Program.	Esralew Esralew Esralew
	3.3.1. BIOTIC RESOURCES: INVENTORIES		
1E	*Vegetation Mapping* Assist Refuges with vegetation mapping, vegetation surveys and development of mapping standards.	Continuation of pilot project to conduct vegetation mapping at Anaho Island and Ruby Lake NWRs. Expect to complete by the end of 2012. Prepare draft workflow and standards for vegetation mapping, quality assessment/quality control, and accuracy assessments. Continuation of project to develop vegetation mapping guidelines. Expect to complete by the end of 2012.	Keller

Blueprint Objectives and Tasks	Project description	Planned products	Staff
1C	*Species Observation Data* Document species observation data from refuges to develop documented species lists. **Note: this activity overlaps with species data management under Data Management section.*	Develop proposal/project plan for pilot species data management system.	Keller
	3.3.2. BIOTIC RESOURCES: MONITORING		
4C	*Wildlife Monitoring - Birds* Identify landscape-level (flyway, national and state) conservation priorities related to birds in Region 8. Analyze bird monitoring plans (e.g., North American Waterbird Conservation Plan, Southern Pacific Shorebird Conservation Plan) to identify and summarize bird-related goals, objectives and strategies.	Database of bird conservation plans that overlap with Region 8 refuges by end of FY 2012. Database will include species of concern lists (e.g., Migratory Bird Management Focal Species List). Report summarizing flyway, national and state goals, objectives and strategies related to birds by end of FY 2012.	Richmond
	Provide support for Mid-Winter Waterfowl Surveys in Region 8, starting with a pilot project in San Francisco (SF) Estuary. Recruit new observers, pilot global positioning system (GPS) for recording individual flock locations, develop a training program for new observers and work on revising the sampling scheme for SF Estuary.	Georeferenced waterfowl dataset for SF Estuary in January 2012. Observer training materials (training handbook and presentation) in December 2011. Revised sampling scheme for SF Estuary Mid-Winter Waterfowl Survey by October 2012.	Richmond

Blueprint Objectives and Tasks	Project description	Planned products	Staff
4C, DM8	Work with partners (refuges, Point Reyes Bird Observatory, California Department of Fish and Game (CDFG), U.S. Geological Survey (USGS), Invasive Spartina Project, SanFrancisco Bay Joint Venture (SFBJV) to standardize monitoring of federally endangered California Clapper Rail and other secretive marsh birds in SF Estuary.	Implementation of National Standardized protocol for monitoring marsh birds in the San Francisco Estuary by January 2012. Pilot project implementation plan by January 2012 and first season of data collected by April 2012. Pilot year summary report by September 2012.	Richmond
4C	*Wildlife Monitoring - Mammals* Work with partners (refuges, CDFG, USGS) to standardize monitoring of federally endangered salt marsh harvest mouse (SMHM) populations in San Francisco Estuary.	Standardized protocol for monitoring SMHM in the San Francisco Estuary.	Block
4C	*Wildlife Monitoring - PRIMR* Document wildlife surveys currently conducted on Region 8 refuges by the end of FY 2013.	Populate the Refuge I&M Reviews Database (PRIMR) with current survey information from at least 10 refuges in Region 8.	Richmond
	3.4. STRESSORS: CLIMATE CHANGE		
5B	*Coastal Sea Level Rise (SLR) Modeling* Identify and collaborate with national and regional working groups, LCCs, local, state, and federal agencies and non-governmental organizations to evaluate impacts of SLR to coastal refuges.	Report summarizing local or regional scale SLR modeling efforts that are applicable to Region 8 coastal refuges. Continuation of project modeling local scale sea level rise impacts to 5 coastal refuges in Region 8. Final report planned for FY 2013.	Block
	Evaluate wildlife response to climate change (sea level rise, extreme events) for tidal marsh dependent wildlife using regional and local scale climate models and inventory and monitoring data.	Report summarizing potential impacts of sea level rise to federally endangered salt marsh harvest mouse.	Block

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	Apply structured decision-making (SDM) process to develop a climate adaptation framework for coastal estuarine refuges in Region 8. Results of this framework will be used to inform climate change I&M needs for refuges. Partners include USGS, SFBJV, CDFG, California Coastal Conservancy, Bay Conservation and Development Commission, and U.S. Army Corps of Engineers).	White paper on climate adaptation framework for San Francisco Estuary. Continue SDM process with partners to refine framework . Begin to expand process in other estuarine areas.	Block
	Pilot project to evaluate the effect of climate change on water supply and wetland management at selected refuges using downscaled climate change projections. Partners include USGS and University of California, Davis.	Draft journal article/white paper describing the results of pilot study at Modoc NWR and one other refuge to be identified.	Esralew
4B	*Evaluate the CA Plant Phenology Project* The National Phenology Network (NPN) is collaborating with the National Park Service (NPS) in California to test and implement NPN phenological monitoring protocols and to test methods for engaging park staff and local communities in phenological monitoring. This is a collaborative effort between NPS, NPN, the National Ecological Observatory Network, University of California, Santa Barbara, and USGS. The role of the Region 8 I&M team will be to evaluate the future applicability of the project to Refuges in Region 8.	Report on outcomes of the California Phenology Project and transferability of project to refuges: protocols, methods, and management support of plant phenology monitoring at National Park units in California.	Block

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	3.4. STRESSORS: INVASIVE SPECIES		
3A	*Invasive Plant Status and Trends* Participate in national pilot project to develop a framework for assessing the status and trends of invasive plants in the National Wildlife Refuge System (NWRS). Assessment here refers to prioritizing species and areas for inventory, determination of inventory methods, conducting inventories (to determining abundance, distribution, invasion pathways), and identifying impacts to resources of conservation concern. The pilot will work with at least 4 refuges, one of which is a Region 8 refuge (San Diego National Wildlife Refuge).	Continuation of FY 2011 NWRS pilot projects. Products are four individual refuge reports (inventory and niche modeling), report summarizing results across pilot projects, and a guide to conducting inventories on refuge lands.	Block
	Partner with the California Invasive plant Council, Cal Flora and others to develop a tool for prioritizing invasive plants for inventory and management on refuge lands (and other conservation partners) using a structured decision-making process.	Report of existing tools for prioritizing species and areas for inventory and management. Draft model/tool for prioritizing species and areas. Tool will be tested at 1-2 refuges in Region 8 in FY 2012. Final tool expected in early FY2013.	Block
	Provide training on invasive plant assessments: methods and tools for inventory	Instruction of National Conservation Training Center Field Techniques for Invasive Plant Mgt. or CA Invasive Plant Council Mapping Course. Invasive plant inventory training and inventory of invasive plants at Modoc National Wildlife Refuge (NWR).	Block
3A	*Early Detection Networks* Identify and participate in Early Detection and Rapid Response Networks for invasive plants. Apply existing tools to provide refuges with information on rare and highly invasive plant species that may threaten refuge resources.	Database of organizations, web applications, and tools that assist refuges in identifying and eradicating rare and highly invasive plant species.	Block

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	Mine existing databases for rare invasive species that may threaten refuge resources.	Report summarizing rare but highly invasive species: ecology, habitats and potential for occurrence on refuge lands.	Block
	3.5. ADAPTIVE MANAGEMENT PROJECTS		
1F	*Refuge-specific Projects* Initiate analysis of existing refuge I&M data to exemplify use of monitoring data to implement adaptive management in a refuge habitat management program.	Support and manage 18 refuge-specific I&M projects. See Appendix 1 for list of projects. Report/manuscript summarizing efficacy of *Lepidium latifolium* control project at San Pablo Bay NWR. Report will include recommendations for adapting existing control plan.	Laing, Keller, Block, Richmond, Esralew Block, Keller
	3.6. DATA MANAGEMENT		
1A	*Legacy Data Project* Collection and cataloging of legacy data using the Geospatially Referenced Archive System (GRAS).	Legacy data catalogued in GRAS for Modoc NWR and Stone lakes NWR as pilot projects. Draft workflow for capturing new refuge data in GRAS.	Keller
DM3	*Database Development* Work with Natural Resources Program Center (NRPC) and other Regional data managers to identify and develop additional databases.	Begin discussion of species database requirements with NRPC and the national Refuges GIS coordinator.	Keller
DM5	*Refuge I&M Reviews Database (PRIMR)* Provide technical support to Region 8 staff in the implementation and evaluation of PRIMR developed by Region 1 to meet the I&M Policy.	Provide support for the implementation of PRIMR.	Keller
DM7	*I&M Data Standards and Governance teams* Participate on national I&M Data Standards and Data Governance teams.	Participate on 1 national team as needed.	Keller

Blueprint Objectives and Tasks	Project description	Planned products	Staff
	3.7. COMMUNICATION		
General Task A	*Information Needs Assessment* Plan and implement refuge needs assessment.	Needs assessment completed for all refuges in Region 8.	Laing, Keller, Block, Richmond, Esralew
	Identify refuge-level I&M priorities. Analyze Region 8 Comprehensive Conservation Plans (CCPs) to identify and summarize goals, objectives and strategies.	Report summarizing Region 8 CCP goals, objectives and strategies related to program areas (e.g., biotic, abiotic, stressors, water, data management).	Laing, Keller, Block, Richmond, Esralew
	Conduct a web-based speaker and discussion series to support information transfer among refuges and conservation partners. Topics will include development and application of standardized I&M protocols, analytical tools, and adaptive management projects. Coordinate invited speakers and discuss current and relevant scientific literature.	Host 8-12 webinars sharing I&M information (e.g., methods, tools, adaptive management projects) among refuges and partners.	Richmond, Block
General Task C	*Partnerships - Conservation* Work with the California Landscape Conservation Cooperative (CA LCC) and other USFWS programs, exploring potential partnerships with Universities and conservation. organizations within Region 8. Continue existing partnerships and develop new partnerships to improve I&M on refuges	Apply inventory and monitoring methods and tools developed through partnerships to refuges in FY 2012. Examples include sea level rise models, secretive marshbird protocol, CA Invasive Plant Council statewide invasive plant early detection models, improved methodology for Pacific Flyway mid-winter waterfowl survey.	Laing, Keller, Block, Richmond, Esralew

Blueprint Objectives and Tasks	Project description	Planned products	Staff
DM9	*Partnerships - Data Management* Region 8 I&M is co-located with CA LCC and USGS in a California State University, Sacramento facility. I&M will work with USGS information technology group to ensure that information technology (IT) needs are appropriately developed and designed to meet I&M program needs.	Well-functioning joint USGS - FWS IT system.	Keller
	Explore using existing USGS and PRBO databases to store Refuge data. Evaluate Multispecies Taxa database for San Diego Legacy Project.	Recommendations provided to San Diego for the use of the Multispecies Taxa database.	Keller

Figure 1. Organizational Chart for Region 8 NWRS Inventory and Monitoring Program

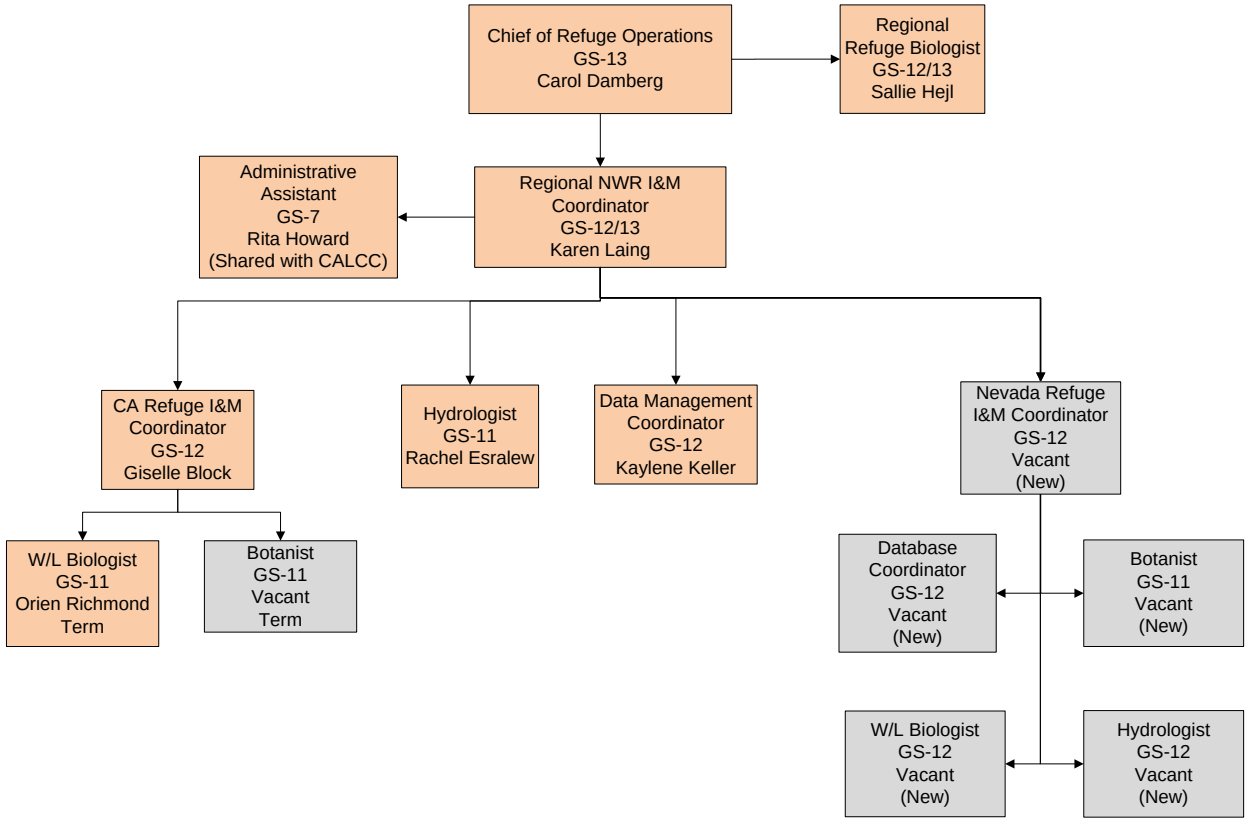

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Figure 2. Map of Region 8 LCCs and National Wildlife Refuges

Appendix 1. Refuge-Specific Projects Funded by Region 8 I&M Program in FY 2011 and Ongoing in FY 2012

Station	Project Title
Modoc NWR	Invasive Weed Baseline Inventory and Legacy Biological Data Synthesis
Don Edwards NWR	Historical Salt Pond Waterbird Survey Data: Baseline Information to Inform Adaptive Management of the South Bay Salt Pond Restoration Project and the Don Edwards San Francisco Bay NWR
Humboldt Bay NWR	Waterbird Abundance in Relation to Vegetation Characteristics and Management Regimes at Humboldt Bay NWR
Stillwater Complex: Anaho Island NWR	Assessing the Relative Importance of Cui-ui (and endangered fish species) to American White Pelican Reproductive Success on Anaho Island NWR using Recovered Fish Tags
Stillwater Complex: Anaho Island NWR	Anaho Island NWR Baseline Vegetation Inventory and Mapping
Klamath Complex: Clear Lake NWR	Survival, Reproduction, and Movements of Greater Sage Grouse on Clear Lake NWR and Surrounding Lands
Stone Lakes NWR	Development of a Habitat Management Database
San Diego NWR	Digital Inventory and Accessibility of Legacy Data for the San Diego National Wildlife Refuge
Sonny Bono Salton Sea NWR	Soil Characterization for Waterfowl, Wetlands and Fields at Sonny Bono Salton Sea NWR
Desert NWR Complex: Ash Meadows NWR	Inventory of Moisture and Salt Distribution in Soils and Sediments that Support Threatened and Endangered Plants in the Ash Meadows NWR
Desert NWR Complex: Desert NWR	Surveys Augmenting a Study on Survival and Habitat Requirements of Desert Bighorn Sheep in the Sheep Range of Desert NWR
Desert NWR Complex: Desert NWR	Retrospective Analysis of Vegetation Change in the Desert NWR: Informing Wildlife Management Plans and Climate Change Monitoring
Desert NWR Complex: Ash Meadows NWR	Inventory and Monitoring of Water Quality (Refuge-wide) and Restoration Sites in Ash Meadows NWR (2 years of funding provided)
Klamath Complex: Tule Lake and Lower Klamath NWRs	Evaluating Migratory Wetland Bird Response to Water Delivery and Habitat Management Alternatives on Tule Lake and Lower Klamath NWRs

Humboldt Bay NWR	Responding to Climate Change at a Coastal Refuge: Synthesizing 25 Years of Historical Ecological Data and Filling Data Gaps to Steer Management towards Increased Ecosystem Resiliency
Don Edwards San Francisco Bay NWR Complex: Farallon NWR	Abundance and Distribution of Arboreal Salamanders (*Aneides lugubris*) on the Farallon Islands
Hopper Mountain NWR Complex: Bitter Creek NWR	Development of Prescribed Grazing Plan (Inventories and Monitoring)
Ruby Lake NWR	Ruby Lake NWR Baseline Vegetation Inventory and Mapping